MODEL TTS 27

TERMINAL BALANCE SWITCHING AND CONTROL SET

Issue #1

NORTHEAST ELECTRONICS CORPORATION

P.O. BOX 649 – CONCORD, N.H. 03301

(603) 224-7466

MODEL TTS 27

TERMINAL BALANCE SWITCHING AND CONTROL SET

Issue #1

Note: The information contained in this publication is the property of Northeast Electronics Corporation and may not be reproduced or used for manufacturing purposes or disclosed to third parties without the written permission of Northeast Electronics.

NORTHEAST ELECTRONICS CORPORATION
P. O. Box 649 - Concord, N. H.
03301

Issued 6/69

Printed USA

MODEL TTS 27 TERMINAL BALANCE SWITCHING AND CONTROL SET

The Terminal Balance Switching and Control Set (TBS & C) is a switchbox intended to facilitate the connection of the several measuring instruments required for terminal balance testing, to a trunk under test. It contains a function switch which in each position sets up the connections for a particular test and makes unnecessary the multiple cord patching otherwise required. Provision is made for Actual Measured Loss, Echo Return Loss, Singing Point and Trans-hybrid measurements. In addition, the set provides the trunk circuit supervisory conditions needed to control the operation of the trunk under test and to furnish normal indications to the operator. This trunk supervision is particularly helpful in making terminal balance tests on outgoing toll connecting trunks; for example, combined recording completing and toll tandem trunks.

The TBS & C Set contains jacks for connecting the following equipment: 201B Noise Generator (or 54C Return Loss Measuring Set), TTS 4A Transmission Test Set, (or TTS 37B Level Noise VU Measuring Set), TTS 12 Singing Point Test Set, and operator's telephone set. Jacks are also provided for connection to the Test Trunks and to 48 volt power supply. The test trunks are incoming and outgoing trunk equipments for connecting trunks under test to the TBS & C Set. If they do not contain a hybrid coil, an external hybrid coil set must be used. The external filters required for singing point and echo return loss tests are also incorporated in the switchbox. Space is provided so that a 1C pad may be installed if it is desired to use the "Zero Loss Trunk" method of return loss measurement

The Trunk Supervision schematic attached indicates the method of providing supervision for the trunks connected to the switchbox. Three jacks are provided for connecting the external trunks. The send jack is used for both incoming and outgoing calls and is patched to the jack in the hybrid coil set or test trunk whose sleeve circuit ends up on the tip of the trunk under test. Separate jacks are provided for the receiving side of the hybrid coil; a REC-INC (incoming) jack for handling incoming calls and a REC-OUT (outgoing) jack for use with outgoing calls. When the REC-INC jack is used, battery through the call relay is placed on the tip conductor of the trunk under test and ground through the same relay is placed on the ring side of the trunk. This is the normal circuit condition for an idle trunk. With this set-up, when the operator completes a connection to the associated outgoing test trunk, the short circuit originated by the distant party causes the call relay to operate, lighting a lamp on the TBS & C Set. When the function switch is moved to the TALK or any of the test positions, the battery and ground are reversed, giving the operator an answer indication.

For making outgoing calls, the REC-OUT jack is connected to the hybrid coil set. This disconnects the call relay and ground and provides a 400Ω short across the tip and ring of the associated test trunk which lights an incoming trunk lamp on the switchboard position. Circuit

balance is maintained under these conditions to avoid introducing noise on the trunk during the test. A key is provided to flash the operator or to disconnect at the completion of testing. (If it is desired to flash the distant operator when using the REC-INC jack, the FUNCTION switch can be moved from TALK to SIGNAL and back to reverse the battery on the trunk).

The FUNCTION switch sets up the following connections and circuit conditions:

Position 1: SIGNAL

In this position (for incoming calls) the battery and ground are placed on the test trunk in the normal manner for idle trunks. When a connection is made to the test trunk, the short circuit at the distant end operates the relay in the set and lights a call lamp.

Position 2: TALK

In this position (for incoming calls) the battery and ground are reversed on the trunk to provide an off-hook indication and the telephone circuit is connected to one side of the hybrid coil. The other side of the coil is terminated in 600Ω.

(In all positions of the function switch, for outgoing calls, a 400Ω short provides for holding forward on the trunk under test.)

Positions 3 & 4: AML-SEND

Transmission power from the TTS 4A is connected to one side or the other of the hybrid coil while the opposite side is terminated. The loss is measured at the distant end of the trunk.

Positions 5 & 6: AML-REC

The receiving side of the TTS 4A (or TTS 37B) is connected to one side or the other of the hybrid coil while the opposite side is terminated. This measures the power transmitted from the distant end of the trunk.

Position 7: THL

The TTS 4A is connected across the hybrid coil for single frequency trans-hybrid loss measurements.

Position 8: SINGING POINT READINGS

The TTS 12 is connected to the two sides of the hybrid coil.

Digitized by the Internet Archive
in 2024

https://archive.org/details/manualsplus_02581

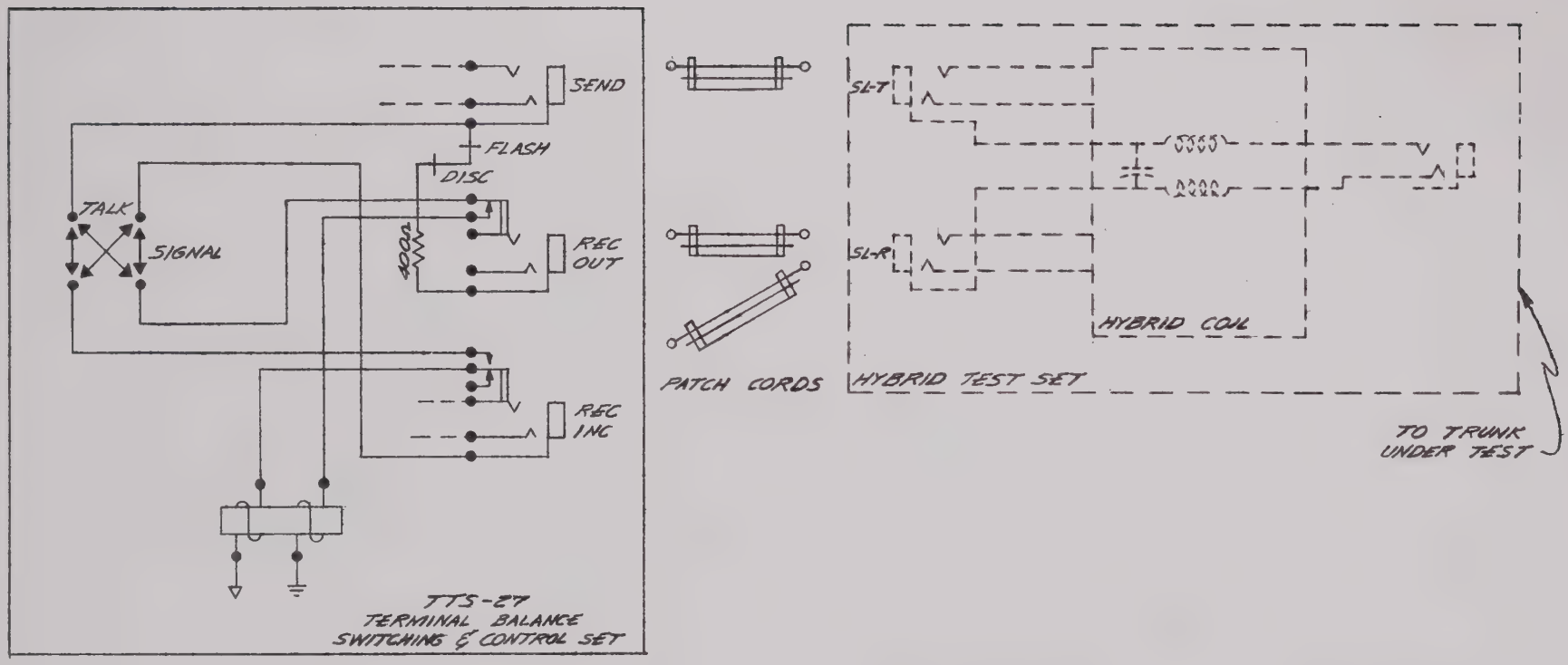
Position 9: ECHO RETURN LOSS

The 201B Noise Generator, (or the 54C Return Loss Measuring Set) is connected to one of the hybrid coils and the receiving side of the TTS 4A (or TTS 37B) is connected to the other side of the hybrid coil through a 497A C-message weighting filter and a 1:1 repeating coil. (Note: The C-message weighting filter is included in the TTS 37B).

Position 10: TERMINATION

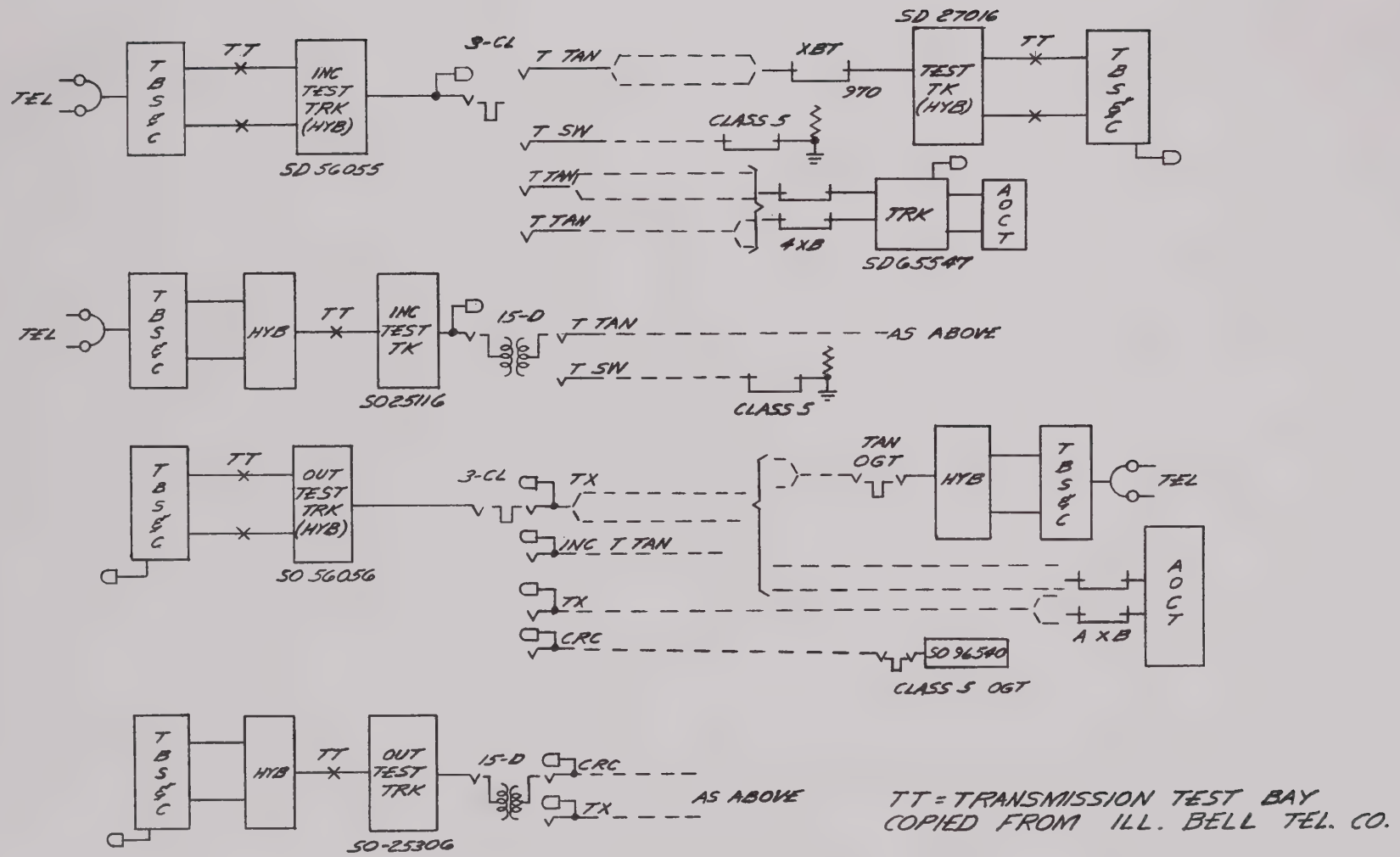
Both sides of the hybrid coil are terminated in 600Ω.

An application schematic is attached which shows the several trunk combinations with which the TBS & C Set is intended to be used. It can also be used at AOCT's or other locations just to obtain the convenience of the FUNCTION switch when the Supervision feature is not required.



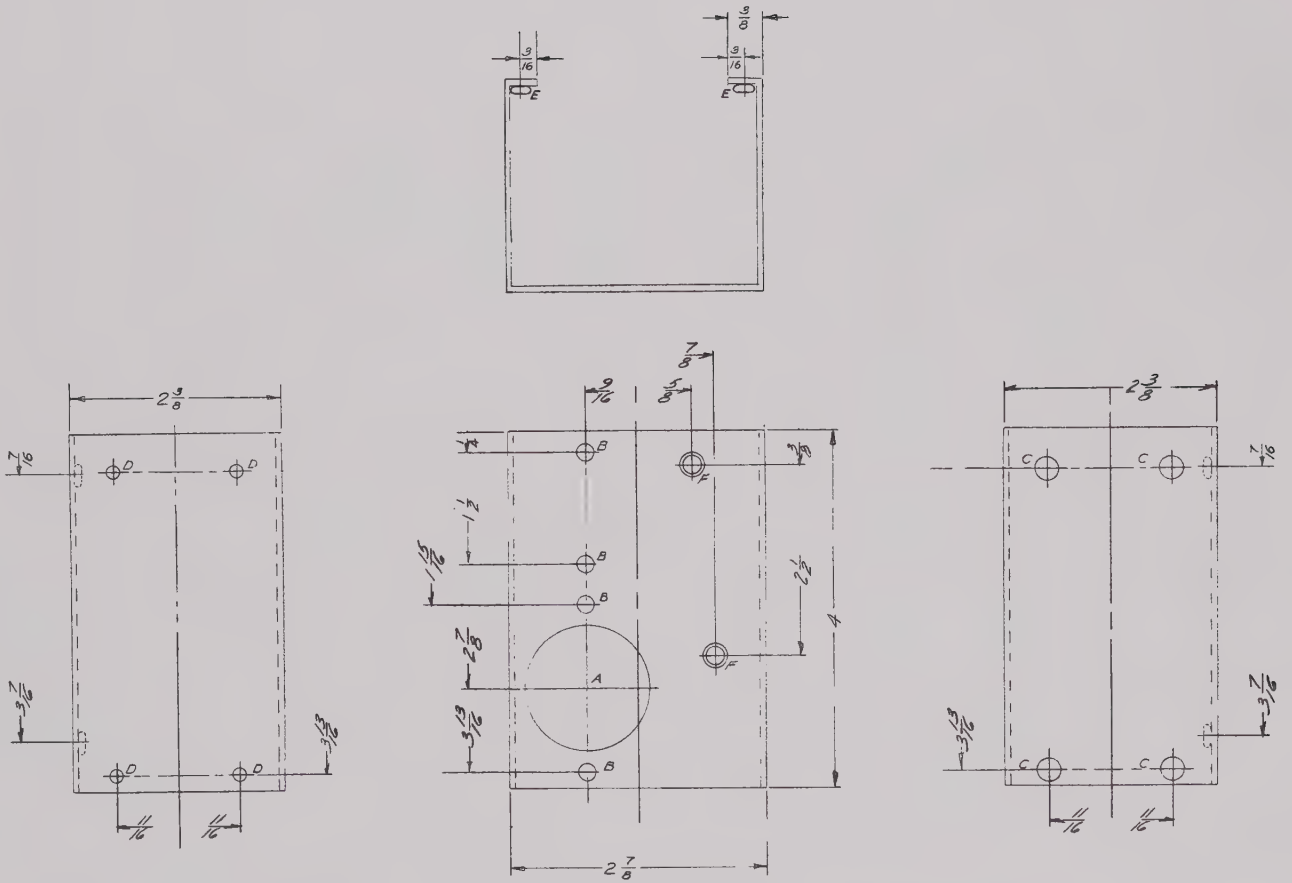
NOTE:
THESE CIRCUITS PROVIDE SUPERVISION CONTROL FOR TRUNKS UNDER TEST; NAMELY 400Ω SHORT FOR OUTGOING TRUNKS AND BATT. & GND. FOR INCOMING TRUNKS.

TTS-27
TERMINAL BALANCE SWITCHING & CONTROL SET
TRUNK SUPERVISION SCHEMATIC FIG.-1



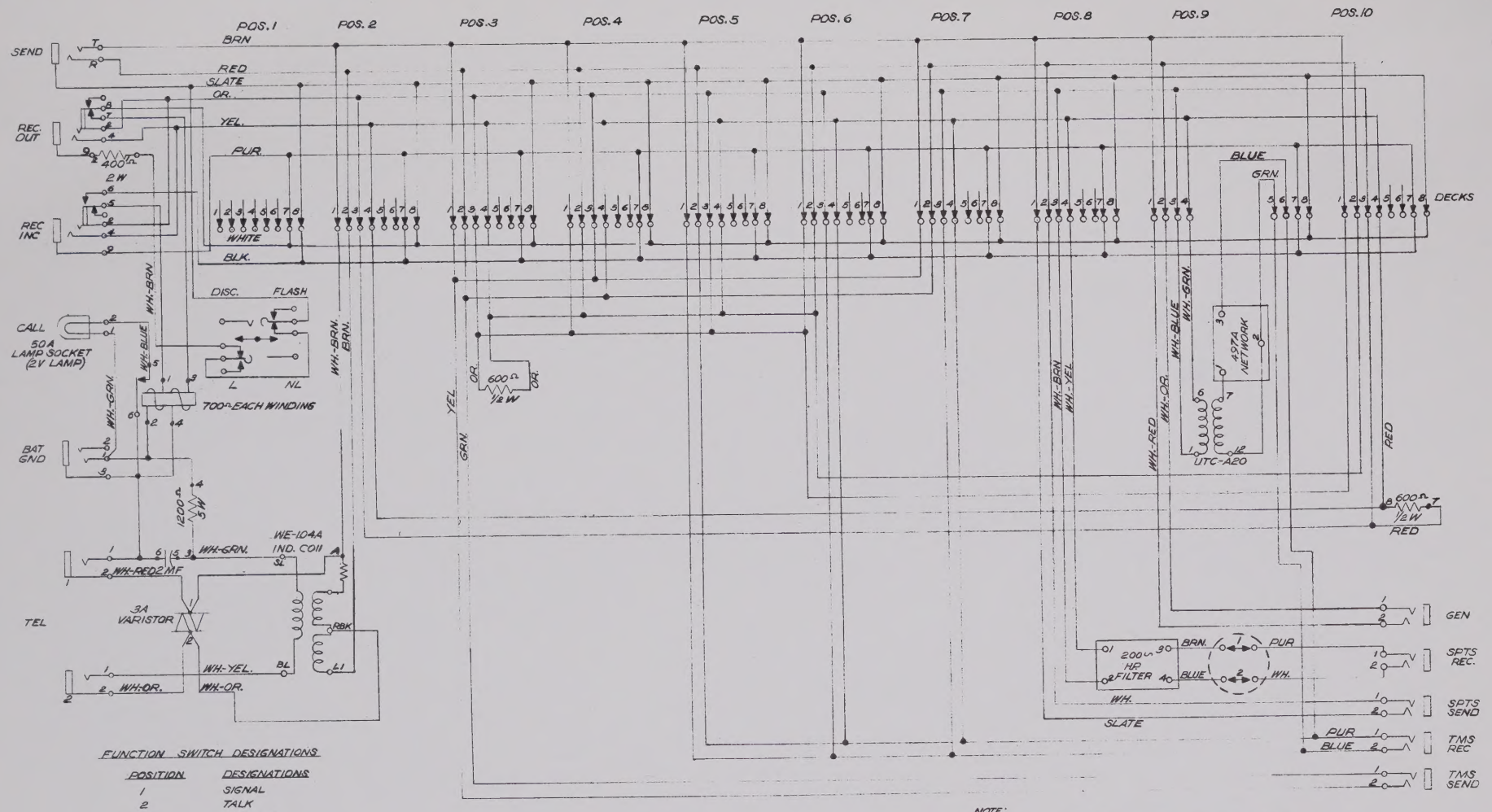
TT = TRANSMISSION TEST BAY
COPIED FROM ILL. BELL TEL. CO.

TERMINAL BALANCE
SWITCHING & CONTROL SET
APPLICATION
FIG. - 2



MOUNTING BRACKET

TTS-27



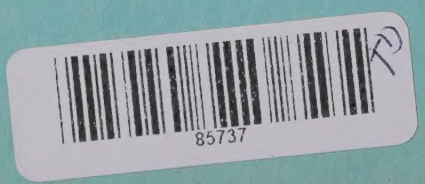
FUNCTION SWITCH DESIGNATIONS

POSITION	DESIGNATIONS
1	SIGNAL
2	TALK
3	AML S-1
4	AML S-2
5	AML R-1
6	AML R-2
7	THL
8	SPR
9	ERL
10	TERM

NOTE:
DRAWING COPIED FROM PRINT SUPPLIED BY ILLINOIS BELL TELEPHONE COMPANY

TERMINAL BALANCE SWITCHING AND CONTROL SET

TTS-27


85737